

What is claimed is:

1. A magnetron sputtering system for deposition of non-magnetic materials comprising permanent magnets fastened to the magnetic target surface facing the substrates at an appropriate distance from the substrates.
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2. The system of claim 1, wherein the magnets are coated with suitable materials such as the target material or a non-contaminating material with respect to the deposited coating so that no contaminating materials are deposited on the substrate due to magnet erosion.
- 10 3. The system of claim 1, wherein the permanent magnets are directly exposed to the plasma rather than through the thick target.
4. The system of claim 1 wherein, the permanent magnets are held on the backing plate by a method selected from the group consisting of magnetic force, adhesive bonding, mechanical means or by a combination of these means.
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5. The system of claim 1, wherein the thickness of the target is not limited.
6. The system of claim 1, wherein the surface of the target is a non-planar, machined surface that may be used for a variety of applications.
7. The system of claim 1, wherein there is additionally a water jacket.
- 20 8. The system of claim 1, wherein there are no rotating magnets.
9. The system of claim 1, wherein the magnets provide a stable plasma with no abnormal arc discharge and deposition uniformity due to their location of the surface of the target.

10. The system of claim 1, wherein the plasma feeding and cooling are effected without the use of a high power motor.
11. The system of claim 1, wherein the shape of the magnets provides magnetic flux over the entire erosion area.
- 5 12. The system of claim 1, wherein the target is laminated to a magnetic backing plate.

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